MEMORANDUM

TO: Tom Hagler

FROM: Bruce Herbold

RE: Delta alternative for CalFed

DATE: May 28, 1996

BACKGROUND

System flexibility has been a subject of considerable interest in improving project operations in regard to the protection of aquatic resources. The CalFed Operations Group has altered project operations on several occasions to protect resources without reducing deliveries to contractors. The flexibility of the operations group has been severely constrained by the physical nature of the delta and export facilities.

Within the alternatives presented by CalFed to the public there is none that maximizes system flexibility as a way to achieve the four project goals: water supply reliability, water quality improvements, ecosystem restoration, and system stability. This memo outlines an alternative that stresses operational flexibility to achieve substantial gains in all four areas.

ALTERNATIVE ELEMENTS

Install gates and increase channel depths in such a way that exported water is drawn to the pumps from diverse areas of the delta.

These export pathways should include screened intakes from Franks Tract and the lower half of Old River, from the mid-delta at lower Middle River, from the eastern and southern delta at Turner and Columbia cuts, and from the head of Old River. These gates could be tide gates so that water elevations in south delta were kept high.

Export pathways could have internal gates to extend the path of exported water through various parts of the delta.

North delta channels may require deepening of the North (and possibly the South Fork) of the Mokelumne River. A small isolated facility could be added if studies indicate that supply reliability is inadequate without it. Entry points into north delta channels should be gated or screened.

Construct south of delta storage solely for the use of municipal and industrial users, perhaps using elements of the Kern Fan and Arvin-Edison proposals. If environmentally acceptable storage sites are unavailable, alternative storage option incorporating within-delta storage should be investigated. Within-delta storage, operated along the lines of the draft ARMP for the Delta Wetlands project, could have additional environmental benefits.

Restructure areas for improved ecosystem performance, areas near export pathways should emphasize waterfowl and other wildlife species while areas away from major diversion points should emphasize aquatic species.

Other essential and core actions already described by CalFed should be included with the addition of demand management scenarios as discussed by Palma Risler.

ALTERNATIVE BENEFITS

Ecosystem benefits

The biology of the estuary's aquatic species could allow alternative export paths to drastically reduce the environmental impact of project operations. For example, San Joaquin River flows were in excess of 5000 cfs in roughly 1/3 of the years from 1956-1993 during the months of January, February, and March. By drawing most of the project's exports through upper Old River the projects could substantially reduce their impacts on winter-run salmon. Conversely, from April-June, when San Joaquin salmon are outmigrating, closure of a barrier at the head of Old River while drawing water from Frank's Tract would minimize net velocities toward the pumps and likely minimize impacts on larval delta smelt and striped bass while offering substantial protection to salmon.

Passage of water through a maze of sloughs before reaching the export pumps would also allow fish more time to grow and either avoid entrainment or survive the salvage operations.

Of course, reduced rates of entrainment are only a part of restoring the aquatic beneficial uses of the estuary. Habitat restoration is required in order to improve abundance, restore geographic range and ensure that substantial portions of the populations of concern are not at risk of entrainment.

Water supply reliability benefits

By shifting the point of impact of exports the project operators would be able to reduce the density of fish per acre-foot of water. Thus, take limits or other concerns about entrainment can be reduced or avoided. Maintenance of healthy populations in areas away from the zone of influence would reduce concerns about entrainment.

Operation of the gates as tidal pumps would raise water elevations in the south delta so that water supply reliability to delta agriculture would be improved.

South-of-delta and within-delta storage would reduce the need to operate export pumps at all times. Even at full development, water use will decline with wet weather conditions in the southern half of the state and undelivered water in wet years would still be available for storage in later years.

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System reliability benefits

Multiple intakes would also permit projects to take water despite catastrophes within the delta such as railroad accidents. Multiple intakes would also prove important when introduced species, such as the zebra mussel, invade and require development of extremely different maintenance schedules.

Water quality benefits

South-of-delta storage dedicated to the use of water quality sensitive users could be filled at times of good water quality and then used for direct use or for blending at times of reduced delta water quality.

At times of low delta inflow, the projects could draw water solely from the central delta to improve the quality of exported water. Passage of water through a maze of sloughs before reaching the export pumps would also improve water quality for south delta agriculture by reducing the amount of San Joaquin River water at times of poor San Joaquin River water quality.